

## **RV Ocean Veritas Data Summary Cruise 6/16/2010**

Review Date 6/17/10

### **Summary:**

This sampling report presents data collected from the RV Ocean Veritas for the period of 6/16/2010. The RV Ocean Veritas will alternate with the Brooks McCall in the collection of subsurface data associated with the Deepwater Horizon oil spill. The sampling strategy for the day was to investigate the presence and location of a deepwater plume approximately 7.5 km northeast of the wellhead. Stations selected for sampling were located approximately 3.0-3.5 km beyond stations sampled on 6/15/10. The sampling strategy aimed to investigate the trend noted over the past two weeks, where the subsurface plume was observed to have moved in a clockwise direction around the wellhead, from the southwest quadrant of the well head to the northeast quadrant of the wellhead. Stations occupied during this reporting period include OV052, OV053, OV054, and OV055.

The CTD array data showed very weak to weak fluorescence at all four stations sampled on 6/16/10.

A total of 9,152 gallons of subsurface dispersant was used on 6/16/2010. The average injection rate was not provided.

The Ocean Veritas collected eight (8) Rototox samples, including duplicates, from Station OV054 at four (4) depths. Bioassays were also conducted for Stations OV046, OV047, and OV051 on 6/16/2010. Rototox data became available for samples collected at stations OV039, OV040, OV046, and OV047.

### **LISST and CTD Fluorometer:**

Water samples were collected at 4 stations. The stations were located 7.5 km from the well head in an arc trajectory, with Station OV052 ENE of the well head, Station OV053 due NE, Station OV054 NNE, and Station OV055 due north of the well head. The *in situ* CTD fluorometer recorded very weak to weak elevations in subsurface fluorescence at all four stations. Station OV052 produced weak fluorescence between 1080-1160m, with two weak peaks at 1080m and 1140m. Station OV053 produced a single weak fluorescence peak at from 1100-1175m, peaking at about 1140m. Station OV054 showed weak fluorescence from 1025-1100m, peaking at 1080m. Station OV055 showed three very weak fluorescence signals at respectively 1025m, 1050m and 1100m.

LISST data was collected at Stations OV052, OV053, OV054, and OV055. For stations and depths where the CTD did not identify submerged oil, the LISST data provided is considered to reflect natural background readings. Station

OV053 reflected the only notable increase in small particulates within the depth range of the submerged oil plume.

LISST data for Station OV052 was reported as 0.8ul/l and 1.5ul/l at 1080m below surface. Station OV053 reflected particles sized about 2.1ul/l and 2.3 ul/l. Station OV054 showed particles sized 0.6 ul/l and 1.2 ul/l at 1075m below surface. Station OV054 showed particles 0.8ul/l and 1.3ul/l at 1050m below surface, and particles 0.4ul/l and 0.6ul/l at 1100m below surface. A total of seventy-two (72) LISST samples were analyzed, including duplicates.

### **Dissolved Oxygen:**

The CTD instrument includes a dissolved oxygen probe. All stations sampled on 6/16/10 exhibited a distinct dip in dissolved oxygen values correlating to depths where subsurface oil was identified. At station OV052, the CTD dissolved oxygen probe recorded D.O. values read at about 3.8 between 1080 and 1140m (approx. 0.8 ml/l lower than background D.O. value curve for those depths). Station OV053 reflected D.O. reading around 3.8 ml/l at about 1140m (approx. 0.9 ml/l below the average D.O. value curve for that depth). Station OV054 showed a small dip in D.O. to about 0.2 ml/l below natural background curve from 1100-1175m. Station OV055 showed D.O. readings between 3.8 and 4.0 with marked dips from 1025-1050m and at 1100m (approx. 0.7-0.8 ml/l below the natural D.O. curve for those depths). This may indicate an increase in microbial activity in direct correlation with the weak subsurface oil plumes identified.

Dissolved oxygen values collected by the use of the Extech probe at all four stations reflected a generally higher scale, with similar results relative to the CTD probe. Station OV052 showed Extech probe D.O. readings from 3.69-5.54 ml/l; Station OV053: between 3.86-5.09ml/l; Station OV054: between 3.04-5.37ml/l; Station OV055: between 3.40-5.33 ml/l.

### **Toxicity Testing (Rototox Assay) (data collected from 6/16)**

The Ocean Veritas collected eight (8) Rototox samples, including duplicates, from Station OV054 at four (4) depths. Samples OV052011/OV052012 at 1200m, samples OV052021/022 AT 1140m, OV052031/32 at 1080m, and samples OV052041/42 at 850m.

Results for Rototox samples collected at Stations OV039 and OV040 became available on 6/16/10. Bioassays were conducted on 6/16/10 for Rototox samples collected from Stations OV046, OV047, and OV051. Results were reported as being available the same day for OV046 and OV047.

## Chemical Analyses (TPH and VOCs) (data collected from 6/16)

Fifty-one (51) samples were collected for TPH analysis and fifty-one (51) samples were collected for VOC analysis. No data were provided for review at this time due to laboratory lag time.

